

POLLUTION PREVENTION

IN RHODE ISLAND

Case studies of the Rhode Island On-Site Technical Assistance Program

Jewelry Mfg. 1,1,1-trichloroethane

Jewelry manufacturer replaces 1,1,1-trichloroethane with an aqueous-based cleaning system.

Industry \ Contact

SIC Code: 3471 Electroplater, Rhode Island

Contact: Company #14

Technology Description

The company is a costume jewelry job shop that employs about 45 people. The primary operation of the company is electroplating.

Until 1993, the company used 1, 1,1-trichloroethane to degrease all metal parts prior to plating. Due to increasing costs and liabilities associated with the use of 1,1,1-trichloroethane and other ozone depleting chemicals, the company decided to switch over to an aqueous cleaner. With help from DEM's Pollution Prevention Program, the company has successfully eliminated all 1, 1,1-trichloroethane use and now utilizes an aqueous-based cleaning system to handle its degreasing needs.

Feedstock Materials

Approximately 2,400 gallons of 1,1,1-trichloroethane was purchased annually

Wastes

600 gallons/year of the 1,1,1-trichloroethane was shipped off site as hazardous waste.

1800 gallons/year evaporated into the atmosphere

Costs

The aqueous cleaning system cost approximately \$3,000 to build in-house.

Operation \ Maintenance

Compared to the 1,1,1-trichloroethane cleaning process, the aqueous cleaning operation has caused an increase in labor costs due to the added steps that aqueous cleaning requires. Labor costs increased by \$2,000/year.
Aqueous soap costs \$400/year

Savings

The company's \$10,000 annual expenditure for 1,1,1-trichloroethane has been totally eliminated.

The company had spent \$300 annually to dispose of waste 1,1,1-trichloroethane.

Payback Period

Approximately 5 months

Impact

The company no longer purchases 1,1,1-trichloroethane, a substance with ozone-depleting properties. Chlorinated solvents have been under strict regulation and have undergone steep price increases; phase out of most of the chlorinated solvents is imminent. With the replacement of 1,1,1-trichloroethane, solvent air emissions have been eliminated, thus reducing health and safety risks to the employees.

Initiating a pollution prevention program has lead to improvements in the way the company handles chemicals, including more efficient labeling and storage of oils and cleaners.